

AMENDMENTS TO THE CLAIMS

1. (Withdrawn) A ceramic material comprising,
0.2 to 5 wt.% of carbon particles having a maximum particle size of 5 μm , wherein said ceramic material has,
an HV10 hardness of not more than 15.5 GPa, and
an E modulus at room temperature of less than 330 GPa.
2. (Withdrawn) The ceramic material of Claim 1 wherein said ceramic material comprises 0.2 to 3 wt. % of carbon particles.
3. (Withdrawn) The ceramic material of Claim 1 wherein said ceramic material has a density corresponding to at least 98.5 % of theoretical density.
4. (Withdrawn) The ceramic material of Claim 1 where said ceramic material has:
an RT flexural strength of at least 750 MPa,
a fracture toughness of at least $5.5 \text{ Mpa m}^{1/2}$, and
a Poisson ratio or transverse contraction coefficient at 25°C of < 0.3 .
5. (Withdrawn) The ceramic material of Claim 1 wherein said ceramic material is free of at least one of macroscopic defects larger than 20 μm and optical heterogeneities larger than 50 μm .
6. (Withdrawn) The ceramic material of Claim 1 wherein said ceramic material is selected from the group consisting of silicon nitride ceramic material and zirconium dioxide ceramic material.
7. (Withdrawn) The ceramic material of Claim 6 wherein said ceramic material is silicon nitride ceramic material and the ceramic material further comprises carbide, nitride, carbonitride,

boride and silicide compounds

of elements of groups IVB, VB and VIB of the periodic table, or
of silicon, or
of iron,

further wherein said particles have a maximum size that does not exceed 10 μm , and the maximum concentration of said particles is < 50 vol.%.

8. (Currently Amended) A process of preparing a ceramic material comprising 0.2 to 5 wt.% of carbon particles having a maximum particle size of 5 μm . wherein said ceramic material has, an HV10 hardness of not more than 15.5 GPa, and an E modulus at room temperature of less than 330 GPa,

said process comprising the steps of:

providing raw materials:

subjecting the raw materials to wet grinding thereby forming wet around raw materials;

sieving a suspension, formed during wet grinding, over a magnetic separator and a fine filter having a maximum filter pore size of 50 μm

adding one or more organic additives to said wet ground raw materials, thereby forming intermediate wet ground materials;

drying and granulating the intermediate wet ground materials; and

shaping the dried and granulated intermediate wet around materials by means of heating and sintering of the organic additives,

wherein process conditions are selected such that carbon particles are separated out, and said ceramic material is free of at least one of macroscopic defects larger than 20 μm and optical heterogeneities larger than 50 μm .

9. (Cancelled)

10. (Currently Amended) The process of ~~Claim 9~~ Claim 8, wherein said raw materials comprise Si_3N_4 powder, sintering auxiliaries and optionally a dispersing auxiliary, and said organic additives are selected from at least one member of the group consisting of polyacrylates,

polyvinyl alcohols, polyglycols and polyvinylpyrrolidone.

said process further comprising.

forming said raw materials into a slip,

wet grinding the slip,

adding said organic additives to the slip, thereby forming a mixture

drying the mixture at temperatures below 200 °C,

granulating the dried mixture,

shaping the granulated and dried mixture heated by heating thoroughly at temperatures of between 100 and 400 °C for a duration of 0.5 to 4 h in air, or between 100 and 800 °C for a duration of 0.5 to 4 h in an inert atmosphere or in vacuo, thereby forming a shaped body, and

sintering the shaped body by means of a two-stage process comprising a first stage and a second stage wherein

in the first stage the shaped body is treated for 0.5 to 5 h at a temperature of up to 2,000 °C under an N₂ or inert gas pressure of 1 to 50 bar, and

in the second stage the shaped body is treated for 0.5 to 2.5 h at a temperature of up to 2,000 °C under an N₂ or inert gas pressure of 50 to 2,500 bar.

11. (Currently Amended) The process of ~~Claim 9~~ Claim 8, wherein said raw materials comprise ZrO₂ powder, sintering auxiliaries, and optionally a dispersing auxiliary, and said organic additives comprise at least one member of the group consisting of polyacrylates, polyvinyl alcohols, polyglycols and/or polyvinylpyrrolidone.

said process further comprising,

processing said raw materials into a slip,

wet grinding the slip,

adding said organic additives to the slip, thereby forming a mixture,

drying the mixture at temperatures below 250°C,

granulating the dried mixture,

shaping the dried and granulated mixture by heating thoroughly at temperatures of between 100 and 400 °C for a duration of 0.5 to 4 h in air, or between 100 and 800 °C for a duration of 0.5 to 4 h in an inert atmosphere or in vacuo, thereby forming a shaped body, and

sintering the shaped body in a two-stage process comprising a first stage and a second stage, wherein

in the first stage the shaped body is treated for 0.5 to 5 h at a temperature of up to $1,700^{\circ}\text{C}$ under an N_2 or inert gas pressure of 1 to 50 bar, and in the second stage it the shaped body is treated for 0.5 to 2.5 h at a temperature of up to $1,700^{\circ}\text{C}$ under an N_2 or inert gas pressure of 50 to 2,500 bar.

12. (Withdrawn) An article of manufacture comprising the ceramic material of Claim 1 wherein said article of manufacture is selected from the group consisting of bearing roller bodies, engine valves and tool inserts.

13. (New) The process as claimed in Claim 10, wherein in the first stage the shaped body is treated at a gas pressure of 10 to 50 bar.

14. (New) The process as claimed in Claim 11, wherein in the first stage the shaped body is treated at a gas pressure of 10 to 50 bar.

15. (New) The process as claimed in Claim 10, wherein said sintering auxillaries are Y_2O_3 or Y_2O_3 and Al_2O_3 .

16. (New) The process as claimed in Claim 11, wherein said sintering auxillaries are Y_2O_3 or Y_2O_3 and Al_2O_3 .

17. (New) The process as claimed in Claim 10, wherein said sintering auxillaries are present in an amount form 5 to 20 wt. % based on the total solids content of the slip.

18. (New) The process as claimed in Claim 11, wherein said sintering auxillaries are present in an amount form 5 to 20 wt. % based on the total solids content of the slip.